LETTERS *to the Editor*

Each member of the California Medical Association recently received a copy of the amended Official Minimum Medical Fee Schedule of the Industrial Accident Commission.

It should be called to the attention of the membership that this is, as stated in its title, a schedule of *minimum* fees. It does not preclude usual and customary charges by physicians, providing the insurance carrier is willing to pay normal fees for the medical services provided.

EDGAR ROSEN, M.D.
447 - 29th St.,
Oakland 9

Cancer Therapy—Evaluation of Supervoltage X-Ray

DOCTOR LEWIS JACOBS' ARTICLE, "Cancer Therapy—Evaluation of Supervoltage X-ray: A Review of the Literature" in the September 1962 issue of CALIFORNIA MEDICINE, contains some statistical errors whose correction changes the implications of his review.

The article in question lists the results of a number of published studies of five-year survivorship under radiation therapy, plus the voltage used in each study, and tests the equality of the survival rates by chi-square. This is done separately for cancer of the tonsil and for cancer of the ovary, as examples of relatively accessible and relatively inaccessible sites. No significant variability in survival rates is found for either site.

The formula used for chi-square is in error. It should be multiplied by one less than the number of studies (16 for tonsil, 11 for ovary). This, plus the correction of minor arithmetic errors, leads to chi-squares of 69.97 (so significant that it isn't tabled) for tonsil and 24.75 (significant at the 1 per cent level) for ovary. This result is much less surprising than the published one, in view of the probable differences from study to study in age of patients, stage of cancer, selection criteria for radiation versus surgery, etc.

Having found such spectacular variations, and having some idea of the manifold uncontrolled factors which may be invoved, it is clear that further examination of the data can lead us at best to conjectures, which must ultimately be confirmed by more carefully controlled investigations.

The further examination should logically consist in deciding whether the observed variation is associated to any significant extent with variation in voltage. This can be done by calculating separate chi-squares for the variation (a) within the high voltage group, (b) within the other group (ortho-voltage-not stated) and (c) between the high voltage and the other group. Since these represent all possible sources of variation, these chi squares add up to the overall chi square calculated above, except for round-off error. The results of these calculations are shown in the table.

	Tonsil		Ovary	
Source of Variation	χ^2	Significance	χ^2	Significance
Within high voltage....	5.27	No	1.14	No
Within other.....	64.59	<1%	21.88	<1%
Between groups.....	.03	No	1.46	No
	69.97	<1%	24.75	<1%

For both sites, the significant variation occurs within the "other" group, not within the high voltage group or between the two groups. In other words, any significant difference which may exist between the high voltage group and the "other" group for either site is swamped by the extreme variability of the other group. Therefore the failure to find such a difference in these data is not a very strong reason to conclude that none exists. I think the verdict should be "not proved."

Sincerely,

WILLIAM R. GAFFEY, Ph.D.
Statistical Consultant, Divison of Research, State of California Department of Public Health

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Dr. Jacobs' Reply

THANK YOU for letting me see Dr. Gaffey's criticism. I think that his last paragraph really agrees in all essential ways with my conclusion, since after all, you do not prove something is so by proving that it is not "not so." If he prefers to consider this "not proved" I have no objection.

Sincerely,

LEWIS G. JACOBS, M.D.